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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/855,661	05/16/2001	Takayuki Ogawa	106145-00018	1390

7590 09/16/2003  
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EXAMINER

LUM, LEE S

ART UNIT	PAPER NUMBER
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3611

DATE MAILED: 09/16/2003

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

09/855,661

Applicant(s)

OGAWA ET AL.

Examiner

Ms. Lee S. Lum

Art Unit

3611

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 11 July 2003.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1,3-6 and 8-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3,4,8,9 and 15 is/are rejected.
- 7) ☒ Claim(s) 5,6,10,11,13 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 16 May 2001 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).
- 11) ☐ The proposed drawing correction filed on \_\_\_\_\_ is: a) ☐ approved b) ☐ disapproved by the Examiner.
- If approved, corrected drawings are required in reply to this Office action.
- 12) ☐ The oath or declaration is objected to by the Examiner.

## Priority under 35 U.S.C. §§ 119 and 120

- 13) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.
- 14) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).
- a) ☐ The translation of the foreign language provisional application has been received.
- 15) ☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449) Paper No(s) \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413) Paper No(s). \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

### DETAILED ACTION

1. An Amendment was filed 7/11/03 in which Claim 16 was also cancelled.
2. The disclosure is objected to because in Claim 5, second-to-last line, "circulation" (first occurrence) should be "circulating".
3. The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

**Claims 1, 3, 4, 8, 9 and 15** are rejected under 35 U.S.C. 103(a) as being unpatentable over Ap 6448535 in view of Hamano et al 4558992.

Re **Claim 1**, Ap discloses a cooling system for fuel-cell powered vehicle V, the system comprising

Primary circulation passage 30 for a primary coolant (col 3, lines 36-37) to be circulated thru primary pump 38,

Secondary circulation passage 32 for a secondary coolant (col 3, lines 40-41) thru secondary pump 66,

Primary heat exchanger 34 for heat exchange between the primary and secondary coolants, and,

Secondary heat exchanger 52 for heat exchange between the secondary coolant and outside air.

Art Unit: 3611

The patent does not show the pumps as driven by a single drive motor, but Hamano shows this feature with single motor 12 driving low-pressure pump 16, and high-pressure pump 18, via respective shafts 14a/b. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include a single drive motor for the pumps, as shown in Hamano, to simplify the design, manufacture, and maintenance of the fuel cell structure. As evident, Hamano further teaches differentiated flow rates for special applications.

Re **Claims 3 and 8**, Ap further discloses

The primary circulation passage 30 connected to the fuel cell (col 3, lines 32-33),

The first heat exchanger 34 with first and second flow passages (unidentified, col 44-47),  
with the first flow passage being located in the primary circ passage,

The secondary circulation passage 32 connected to the vehicle motor (col 3, lines 33-34),

the secondary passage being located in the second flow passage of the first heat exchanger (col 3, lines 44-47).

Hamano teaches the single motor driving two differentiated-flow pumps, as discussed above.

Re **Claims 4 and 9**, Ap, in view of Hamano, discloses the recited elements as provided above.

Re **Claim 15**, Hamano further shows the single motor, and two pumps, arranged collinearly in fig 1. It would have been obvious to one with ordinary skill in the art at the time the invention was made to include this arrangement, as shown in Hamano, to conserve space within, and simplify the design, of the particular fluid circuit. It is noted that this particular configuration does not affect the functionality of the components within the system.

Art Unit: 3611

4. **Claims 5, 6, 10, 11, 13 and 14** are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Prior art does not disclose a cooling system for a fuel cell powered vehicle comprising, inter alia, primary and secondary circulation passages,

each including a heat exchanger,

a single pump motor, and two pumps,

wherein the secondary passage includes main and sub-circulation passages,

the main passage for circulating a secondary coolant through the secondary pump, and both heat exchangers, and,

the sub-circulation passage for circulating the secondary coolant through the secondary pump, second heat exchanger, and heat generating source.

5. RESPONSE TO REMARKS: Moot in light of new art rejections. Examiner maintains Ap discloses the relevant elements as discussed above, in combination with Hamano.

6. Communication with the Examiner and USPTO

Any inquiry concerning this communication should be directed to Ms. Lum at (703) 305-0232, 9 am-6 pm, M-F. Our fax number is (703) 872-9306. Any inquiry of a general nature, or relating to the status of this application/proceeding should be directed to Customer Assistance at (703) 306-5771.

Ms. Lee S. Lum  
Examiner  
9/9/03

